October 8, 1956

Dear Jacques:

I have waited to answer your request of 3 September for the clarification of some confused data on the allelism of mutants of the Lac_1 group. Dr. Newton Morton has been continuing Esther's earlier work on this, and we would be most happy to have your interest on the physiological aspects of these mutants. So far, we have concentrated on the loci of the Lac_1 group, but should have more data in due course on a number of other mutants. Under separate cover, I am sending you the following collection: (all are F- prototrophs)

Lac_{1a}: W-3230, W-3157, W-3134. These are independent recurrences so far apparently allelic (i.e., isoritic:* rit = recombination unit) with one another. W-3230 is derived from Y-87; W-3134 from Y-53. W-3157 is new.

*P.S. This is a joke, if you understand what allelic means.

Lac_{1b}: W-3089 (also carries $Mal_1^{-}S^{r}$) derived from W-112, and equivalent to W-2241 which you may have received long ago

other Lac_1's (mutually anisoritic)(our notation is not yetxx settled):

W-3148, 3152, 3153, 3174, 3175.

In addition, W-3159 and 3133 are second step mutants from Lac_1.

The recombination behavior so far is as follows:
(This summarizes theallelic relations; the sequence is being worked out now in relation to V_6 at the left and P to the right

We have tentatively defined Lac_1 as the isoritic projection of W-3229; more study is needed both from the genetic and physiological side. We would be most immediately interested to learn the quality of W-3229.

*Benzerological notation.

The cistronic*relationships are also being worked out; we have the old datum that 1a and 1b are isocistronic, and some scattered additional observations. I predict that the whole Lac_1 group will be isocistronic but this is not proven. Many of the mutants have been shown to be both anisoritic and heterocistronic with Lac_4.

Rickenberg visited us briefly, and we could discuss some of the points of your permease work— also with Hal, who finally arrived. It seems to me the azide effect is still a point of difficulty: when the inhibitor is used at the same levels as suffice to inhibit the TMG accumulation, the culture should behave just like Lac_1: doubtless there are numerous complexities that should not becloud a clear first-order picture.

Yours sincerely,

Joshua Lederberg